encoding result, a result obtained by entropy encoding index information is also estimated and is used in determination on exclusion. The method of excluding the motion vector predictor candidates is described in relation to Equations 1 through 5.

[0219] Also, according to another exemplary embodiment, the candidate determiner 1420 rearranges all motion vector predictor candidates according to a predetermined criterion, repeatedly performs determination on exclusion for all rearranged motion vector predictor candidates according to Equations 1 through 5, and may selectively exclude at least one motion vector predictor candidate. Overlapped motion vector predictor candidates may be excluded from all rearranged motion vector predictor candidates and determination on exclusion may be repeatedly performed according to Equations 1 through 5.

[0220] When a plurality of motion vector predictor candidates from among all motion vector predictor candidates remain after the candidate determiner 1420 excludes at least one motion vector predictor candidate from among all motion vector predictor candidates, the motion vector decoder 1410 decodes information about a motion vector predictor. The information about a motion vector predictor is decoded according to a predetermined entropy decoding method. The information about a motion vector predictor is information for specifying a motion vector predictor candidate used to predict a motion vector of a current block from among the motion vector predictor candidates from which at least one motion vector predictor candidate is excluded. Information for specifying a motion vector predictor candidate used to predict a motion vector of a current block from among the motion vector predictor candidates that are not excluded in the candidate determiner 1420 is decoded.

[0221] When one motion vector predictor candidate remains after the candidate determiner 1420 excludes at least one motion vector predictor candidate from among all motion vector predictor candidates, the remained motion vector predictor candidate is used to predict a motion vector of a current block and thus the motion vector decoder 1410 may not separately decode information about the motion vector predictor candidate.

[0222] The motion vector restoring unit 1430 restores a motion vector of a current block based on information about a motion vector decoded in the motion vector decoder 1410. The original motion vector difference decoded in the motion vector decoder 1410 and the motion vector predictor candidate used to predict a motion vector of a current block are added to each other so as to restore a motion vector of a current block. A motion vector predictor candidate to be used in predicting a motion vector of a current block is determined from among the motion vector predictor candidates determined in the candidate determiner 1420 and the determined motion vector predictor candidate is added to the original motion vector difference. When a plurality of motion vector predictor candidates remain instead of one motion vector predictor candidate, as a result of exclusion in the candidate determiner 1420, the motion vector predictor candidates used to predict a motion vector of a current block may be determined based on information about a motion vector predictor decoded in the motion vector decoder 1410.

[0223] Since the motion vector predictor candidates are determined by the candidate determiner 1420, even if decoded information about a motion vector predictor is the same, the motion vector predictor candidates used to predict a motion vector of a current block may be motion vectors of adjacent blocks in different locations.

[0224] FIG. 15 is a flowchart illustrating a method of encoding a motion vector, according to an exemplary embodiment.

[0225] Referring to FIG. 15, in operation 1510, an apparatus for encoding a motion vector estimates a motion vector of a current block and determines a motion vector predictor candidate used to predict the motion vector of the current block from among all motion vector predictor candidates. A block that is the same as or similar to the current block is searched in a plurality of reference pictures and as a result of searching, a motion vector is estimated, that is a relative location difference between the current block and a reference block.

[0226] Then, the motion vector of the current block is predicted based on motion vectors of blocks included a previously encoded area adjacent to the current block. In other words, the motion vectors of the blocks included in the previously encoded area adjacent to the current block are set to be motion vector predictor candidates, and a motion vector predictor candidate that is most similar to a motion vector of an estimated current block from among the motion vector predictor candidates is determined. A vector difference between the motion vector of the current block and the determined motion vector predictor candidate, that is an original motion vector difference, is generated.

[0227] In operation 1520, the apparatus for encoding an image selectively excludes at least one motion vector predictor candidate from among all motion vector predictor candidates. A motion vector predictor candidate that is not used to predict the motion vector of the current block is excluded from among all motion vector predictor candidates.

[0228] The apparatus for encoding an image generates a virtual motion vector by using a predetermined motion vector predictor candidate from among all motion vector predictor candidates and the original motion vector difference generated in operation 1510. The generated virtual motion vector and other motion vector predictor candidate are used to generate a virtual motion vector difference. The virtual motion vector differences for each of all motion vector predictor candidates are generated, and the generated virtual motion vector differences are compared with the original motion vector difference so that the predetermined motion vector predictor candidate may be selectively excluded.

[0229] A process of generating the virtual motion vector and selectively excluding the motion vector predictor candidate in operation 1520 is repeatedly performed for all candidates and thus at least one motion vector predictor candidate may be excluded from all candidates. When an excluding process is repeatedly performed, the virtual motion vector differences for motion vector predictor candidates other than motion vector predictors that are already excluded are calculated and the calculated virtual motion vector differences may be compared with the original motion vector difference.

[0230] The virtual motion vector difference and the original motion vector difference may be evaluated and compared with each other based on a predetermined evaluation function, wherein the predetermined evaluation function may be a function that estimates an entropy encoding result. The virtual motion vector difference and the original motion